ANNEX B

NON-MEDICAL PROTECTION PROGRAMS

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SECTION 1: FIELDED AND PRODUCTION ITEMS

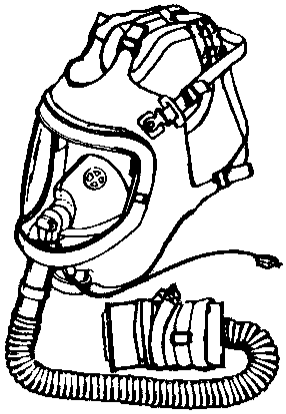
RESPIRATORY

M17A2 Protective Mask

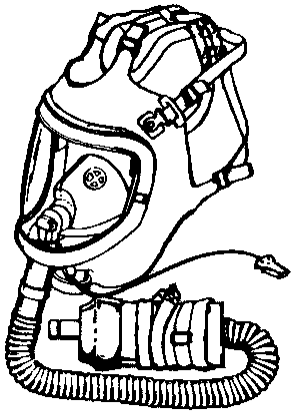
The M17A2 Protective Mask consists of a natural blend rubber face piece; two activated charcoal filters mounted within cheek pouches; a voicemitter to facilitate communications, a drinking tube; eyelens outserts to protect the mask's integral eyelens and reduce cold weather fogging; an impermeable hood; and a carrier for the mask, its components, and medical items (such as the Nerve Agent Antidote Kit). The Army and Marine Corps are replacing this mask with the M40 series protective mask. The Air Force and Navy have replaced it with the MCU-2A/P.

ABC-M24 Aircraft Protective Mask

This protective mask provides the wearer protection from NBC aerosols/vapors both in aircraft, and on the ground. The mask consists of: wide view, clear plastic lens embedded in a butyl rubber face blank; an integral microphone; eyelens outserts; carrying case; anti-fog kit; and a hose-mounted filter canister. The mask has a microphone connection to fit the aircraft communications systems. The M24 has an adapter that allows coupling to the aircraft's oxygen supply system. The M24 is being replaced by the M45 and M49 masks.



M25A1 Tank Protective Mask



This protective mask provides the wearer protection from NBC aerosols/vapors both in the vehicle/aircraft, and on the ground. The mask consists of: wide view, clear plastic lens embedded in a butyl rubber face blank; an integral microphone; eyelens outserts; carrying case; anti-fog kit; and a hose mounted filter canister. The mask has a microphone connection to fit the armored vehicle communications systems. The M25A1 has an adapter that allows it to be coupled to the tank's filtered and temperature controlled Gas Particulate Filtration Unit (GPFU). The M25A1 is being replaced by the M42/M42A1/M42A2 protective mask.

MCU-2A/P Protective Mask

The MCU-2A/P provides eye and respiratory protection from all chemical and biological agents as well as radioactive particulate material. The mask uses a replaceable, standard NATO filter canister which is mounted on either side of a wide-view optical quality visor. The mask provides improved fit, comfort, and visibility relative to earlier masks, and includes a drinking tube for attachment to the standard canteen, and voicemitter for improved communications.

M40/42 Series Protective Mask

M40 Mask

The M40/42 protective masks provide eye-respiratory face protection from tactical concentrations of CB warfare agents, toxins and radioactive fallout particles. Each mask consists of a silicone rubber face piece with an in-turned peripheral face seal and binocular rigid lens system. It accommodates NATO standard canisters, which can be worn on either cheek of the mask. The M40 is designed for the individual dismounted ground warrior, while the M42 is designed for combat vehicle crewmen. Recent improvements include a universal second skin, making the mask compatible with JSLIST protective clothing, and laser-safe eye lens outserts. The mask faceblank has been made a spare part, which has resulted in a significant operation and support cost savings. Use of modular parts permits the M40 to be used in both the M40 and M42 configuration. This has resulted in significant operational and support cost savings.

M42 Mask

M43 Protective Mask

The M43 Aviator Mask consists of a form-fitting face piece with lenses mounted close to the eyes; an integral CB hood and skull-type suspension system; an inhalation air distribution assembly for air flow regulation, lenses and hood; and a portable motor/blower filter assembly which operates on either battery or aircraft power. The M43 Type I was developed for the AH-64 aviator and is compatible with the AH-64 Integrated Helmet and Display Sight System and the Optical Relay Tube. The M43 Type II is intended for the general aviator.

M45 Aircrew Protective Mask (ACPM) (FUE FY98)

The M45 Air Crew Protective Mask is specially designed to meet the requirements of helicopter and special crews. It does not require power or forced air to provide CB protection; it provides compatibility with helicopter optical systems, aircraft displays and night vision devices; and has reduced weight, cost and logistical burden when compared to the M48/M49 series of mask. The ACPM has close fitting eyelenses mounted in a silicone rubber facepiece with an in-turned peripheral seal, a detachable hood system, and utilizes the standard NATO canister.

M48/49 Protective Masks - Production

M48 Mask

The M48/M49 are third generation M43 series masks. The M48 mask replaces the M43 Type I mask and will be the only mask for the Apache aviator for the foreseeable future. The M49 mask, along with the M45 mask will replace the M24 and M43 Type II masks. The M48 and M49 masks consist of a lightweight motor blower, a new hose assembly, a web belt, the mask carrier, facepiece carrier, eyelens cushions, and the facepiece of the M43A1. The M49 mask will only be issued to the General Aviation population in Korea

M49 Mask

Aircrew Eye/Respiratory Protection (AERP)

The AERP (replaces the MBU-13/P system for aircrews) is a protective mask which enables aircrews to conduct mission operations in a chemical-biological environment. The AERP system includes a protective hood assembly with a standard MBU-12/P mask, an intercom for ground communication, and a blower assembly that provides de-misting. The blower is stowed during flight operations on a bracket that is mounted inside the aircraft.

A/P22P-9(V) - Production

The A/P22P-9(V) provides head-eye-respiratory protection via the MCK-3/P respirator and CQK-8/P tactical ventilator for "helo" crews. The ensemble, which utilizes a blower to provide positive pressure, has anti-drown features and provides system compatibility with a large variety of aircraft. In FY96, the ensemble was upgraded with a rip away face plate, and improved tactical ventilator with a smaller man-mounted pusher fan.

ANCILLARY MASK EQUIPMENT

M41 Protection Assessment Test System

The M41 Protection Assessment Test System (PATS) enhances operational capability by validating proper fit of the mask to the face of the individual. The PATS is a new capability that provides a simple, rapid, and accurate means of validating the face piece fit and function of protective masks.

Voice Communication Adapter

The Voice Communication Adapter (VCA) is a low risk program providing additional capability to the M40/42 mask. The VCA is a joint program between the USMC and US Army.

Universal Second Skin

The Universal Second Skin is one of the components of a pre-planned product improvement (P3I) in the M40/M42 series mask. The second skin provides protection for the mask faceblank material. This program is a Joint U.S. Army/U.S. Marine Corps effort. Both Services developed prototype designs and, after field user and human engineer testing, the Marine Corps design was selected. The Air Force is developing a second skin for the MCU-2A/P.

BATTLEFIELD PROTECTIVE SUITS

Battle Dress Overgarment (BDO)

The BDO is a camouflage patterned (desert or woodland), two piece, air permeable overgarment typically worn over the duty uniform. The overgarment material consists of an outer layer of nylon cotton, and an inner layer of charcoal impregnated polyurethane foam. The BDO provides protection against chemical agent vapors and liquid droplets, biological agents (to include toxins), and radioactive alpha and beta particles. The BDO is issued in a sealed vapor-barrier bag that protects the garment from rain, moisture and sunlight. The BDO provides chemical protection for 22 days (extendible by commanders with increased risk to the wearer), and should be replaced within 24 hours of contamination by liquid chemical agents.

Chemical Protective (CP) Suit, OG MK-III (Navy Suit)

The Chemical Protective Overgarment (CPO) protects the wearer against all known chemical and biological agents which present a percutaneous hazard. The suit consists of a smock and separate pair of trousers, and is sized to accommodate the 5 percentile female through the 95 percent male ratio. This garment will be replaced Navy-wide beginning in calendar year 1997 by a superior suit developed under the auspices of the Joint Service Lightweight Integrated Suit Technology (JSLIST) program. The Mark III chemical, biological, radiological (CBR) suit protects against chemical agent vapors, aerosols, droplets of liquid, and biological agents.

CP Suit, Saratoga (USMC)

Like the BDO, the SARATOGA CP Suit is an air permeable, camouflage patterned overgarment. Instead of carbon impregnated foam, SARATOGA uses spherical, activated carbon adsorbers immobilized in the liner fabric. This system allows for a lighter, cooler garment, which is launderable.

CWU-66/P Aircrew Ensemble - Production (FUE FY96)

The CWU-66/P, a one-piece flightsuit configuration, provides 24-hour protection against standard NATO threats. It is made with Von Blucher carbon spheres, and is less bulky than prior ensembles. It offers a reduced thermal load burden and is compatible with aircrew life support equipment.

Chemical Protective Undergarment (CPU)

The CPU is a two-piece lightweight undergarment made of a non-woven fabric containing activated charcoal. When worn under the combat vehicle crewmen (CVC) coverall or battle dress uniform (BDU), the CPU provides 12 hours of protection and is durable for 15 days.

SPECIALTY SUITS

Suit Contamination Avoidance Liquid Protection (SCALP)

The SCALP is worn over the BDO to provide 1 hour of protection from gross liquid contamination. The SCALP, which consists of a jacket with hood, trouser and booties, is made from a polyethylene-coated Tyvek™ material.

Interim-Self Contained Toxic Environment Protective Outfit (STEPO-I)

Approved as an interim system for 2-hour depot operations in Immediate Danger to Life and Health (IDLH) environments. It consists of encapsulating suit made of butyl rubber-coated nylon with a polycarbonate visor. Respiratory protection is provided by one of two options—tethered clean air supply or a self-contained rebreather worn as a back-pack. Cooling is provided by an ice vest worn underneath the suit.

Self-Contained Toxic Environment Protective Outfit (STEPO)

STEPO will provide OSHA level A (29 CFR Part 1910, 120 App A) protection for Army Chemical Activity/Depot (CA/D), Explosive Ordnance Disposal (EOD) and Technical Escort Unit (TEU) personnel against chemical warfare agents, industrial chemicals, rocket fuels, and oxidizers as well as oxygen deficient atmospheres for periods of up to four hours. The STEPO, a chemical protection system, consists of a totally encapsulating suit with gloves and booties, the standard Toxicological Agent Protective (TAP) boot, fresh-air breathing systems for both Self-Contained and tethered operations, a cooling system, and a communications system. The suit was designed to be worn five times against vapor agent contamination.

PROTECTIVE ACCESSORIES

Green/Black Vinyl Overboots (GVO/BVO)

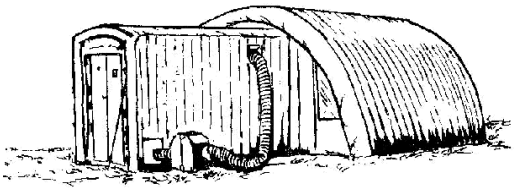
The GVO/BVO are fitted vinyl overshoes that are worn over the combat boots to provide chemical and moisture protection during wet weather. The impermeable GVO/BVO provide protection against chemical agents for 12 hours and are durable for up to 14 days.

CP Gloves

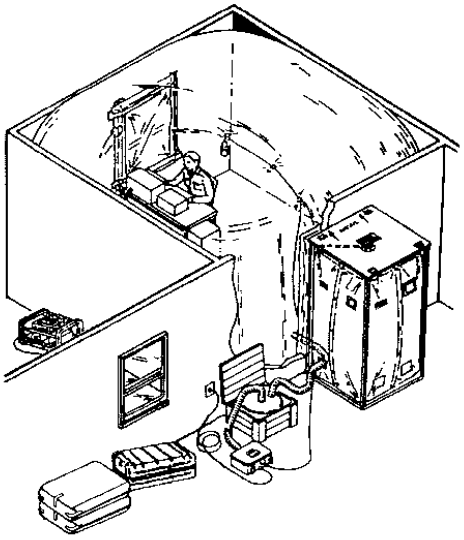
The CP glove set consists of a butyl-rubber outer glove for protection from chemical agents, and a cotton inner glove for perspiration absorption. CP outer gloves come in three thicknesses: 7, 14, and 25 mil. The 7 mil glove is used by personnel who require a high degree of tactility, such as medical and personnel engaged in electronic equipment repair. The 14 mil glove is used by personnel like aviators and mechanics, in cases when good tactility is necessary and stress to the glove is not too harsh. The 25 mil glove is used by personnel who require a durable glove to perform close combat tasks and heavy labor. The 14 and 25 mil glove sets will provide protection for at least 24 hours. The 7 mil glove set should be replaced within 6 hours of exposure to a chemical agent.

COLLECTIVE PROTECTION EQUIPMENT

M51 Protective Shelter, CB



The M51 shelter is a trailer-mounted system that consists of the following major components: a 10 man shelter, a protective entrance, and a support system. The shelter and protective entrance support themselves through air filled ribs. The protective entrance minimizes carry-over of vapor contamination from outside to inside the shelter, and paces entries to the shelter to prevent loss of shelter over-pressure. The air handling system is permanently mounted in the trailer, and provides forced, filtered, and environmentally conditioned air to the shelter. The M51 is mostly used by battalion aid stations and other medical units. It can also be used as a temporary rest and relief shelter. The Marine Corps has recently fielded a stand-alone collective protection shelter (The Portable Collective Protection Shelter). This system can be erected and employed by 4–6 personnel in approximately one hour. This system provides heat stress relief from the effects of MOPP for 12-14 personnel.



M20 Simplified Collective Protective Equipment

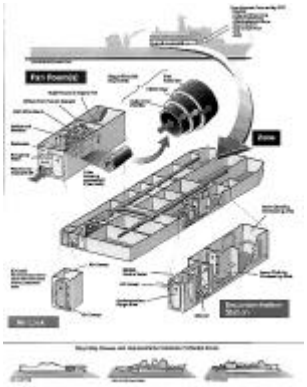
The M20 SCPE is used to convert an interior room of an existing structure into a positive overpressure, NBC collective protection shelter where individuals can perform assigned missions without wearing the protective mask and overgarment. The system consists of a liner, protective entrance, filter canister, and support kit.

M20A1/M28 Simplified CPE (SCPE)

The SCPE is a low cost method of transforming a room of an existing structure into an NBC collective protection shelter for command, control and communication (C^3) and soldier relief functions. M20A1 is a room liner for existing shelters; M28 is a liner for the TEMPER tent. Components include a CB vapor resistant polyethylene liner, which provides a protected area in an existing structure; a collapsible, protective entrance, which allows entry to/exit from the protected area; a hermetically sealed filter canister, which provides filtered air to both the liner and the protective entrance; and a support kit, which contains ducting, lighting, sealing and repair material and an electronically powered blower. A pre-planned product improvement (P^3I) program to the SCPE (M20A1/M28) provides liquid agent resistant liners, protective liners for tents, interconnectors, and an interface with environmental control units. The improved SCPE also allows more people to enter at one time, and protects hospitals under tents.

Chemically Protected Deployable Medical System (CP DEPMEDS) - Development/Production

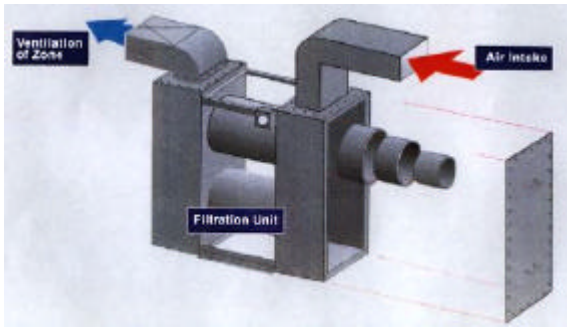
The Army's CP DEPMEDS program is a joint effort with the Air Force to provide environmentally controlled collective protection into field hospitals in order to be able to sustain medical operation for 72 hours in a chemical contaminated environment. Environmentally-controlled collective protection is provided through the integration of M28 SCPE, chemically protected air conditioners, heaters, water distribution and latrines, and alarms systems. M28 SCPE provides protection to existing TEMPER Tents and passageways within the hospital. DEPMEDS ISO shelters are protected through the replacement of existing shelter seals with those that are CB protected. The Field Deployable Environmental Control Unit will provide air conditioning; the Army Space Heater provides heating. Both are chemically protected through the addition of a kit. To sustain approximately 500 patients and staff, chemically protected latrines and water distribution systems are in development.



Shipboard Collective Protection System - Production

Shipboard CPS is an integral part of the HVAC systems on new construction ships. CPS provides each protected zone on the ship with filtered air at an overpressure of 2.0 inches Hg. CPS is modular and is based on a Navy-improved version of the 200 cfm M56 filter. CPS includes filters, filter housings, high pressure fans, airlocks, pressure control valves, low pressure alarm system, and personnel decontamination stations.

Selected Area Collective Protection System - Production



Selected Area CPS (SACPS) is designed to be easily adaptable to current ships to provide selected spaces (*i.e.*, command and control, berthing areas, *etc*.) with an affordable CPS system. SACPS is modular and is based on a Navy-improved version of the 200 cfm M56 filter. SACPS is easily integrated into the ship's existing HVAC system, and includes filters, filter housings, a high pressure fan, an airlock, a pressure control valve, and a low pressure alarm system.

CB Protected Shelter (CBPS) - Production

CBPS is a highly mobile, rapidly deployable shelter system designed to be used for Echelon I and II forward area medical treatment facilities. The system is self-contained and self-sustaining. The CBPS consists of a dedicated Heavy Variant HMMWV, a Lightweight Multipurpose Shelter (LMS) mounted onto the vehicle, a 300 square foot airbeam support CB protected shelter, and a High Mobility Trailer with a 10kW tactical Quiet Generator Set. The HMMWV and LMS transports a crew of four and their gear. All medical equipment required for the shelter is transported in the LMS or on the trailer. The CB shelter is rolled and carried on the rear of the LMS during transport. The CBPS is operational within 20 minutes with a crew of four. All power required to support operations is provided by the HMMWV engine or with the 10kW generator for limited power. The system is environmentally conditioned by a hydraulically powered environmental support system, which provides filtered air, heating, air conditioning, and electrical power. The system is presently in production with fielding scheduled to initiate in 1QFY99.

Portable Collective Protection System

The transportability and ease of use of the Portable Collective Protection System (PCPS) permit mobility and flexibility in chemically and/or biologically contaminated areas. PCPS can be erected by four Marines within 30 minutes wearing MOPP 4 gear. The protective shelter is divided into a main area and two smaller compartments; the entry area, and the storage area. When overpressure is applied, the protective shelter provides protection from liquid and vapor chemical and biological agent. An airlock (protective entrance) allows purging of possible chemical agent vapors and additional decontamination of personnel entering the main area.

GENERIC NBC FILTERS AND COLLECTIVE PROTECTION FILTRATION SYSTEMS

Generic, high volume air flow NBC filters, and CP filtration systems exist that are currently installed on a wide variety of applications. These CP systems are modular and have been applied to numerous vehicles, vans, mobile shelters, and fixed sites.

GENERIC NBC FILTERS

Gas particulate filters remove toxic gas and dust from air supplied to collective protection systems and armored vehicle overpressure systems.

M48/M48A1

The 100 cubic foot per minute (cfm) filter is used in the M1A1/A2 Abrams tank, M93 Modular Collective Protection Equipment (MCPE), and Paladin Self Propelled Howitzer.

M56

The 200 cfm filter is used as the basic filter set in the MCPE and in Naval applications. It can be stacked to obtain filtration of higher air flow rates.

600 cfm and 1200 cfm Stainless Steel Fixed Installation Gas Filters

These filters are used in fixed site applications where high volumes of air flow are required. They can be stacked to provide higher NBC filtered air flow rates. Particulate filter would be procured separately.

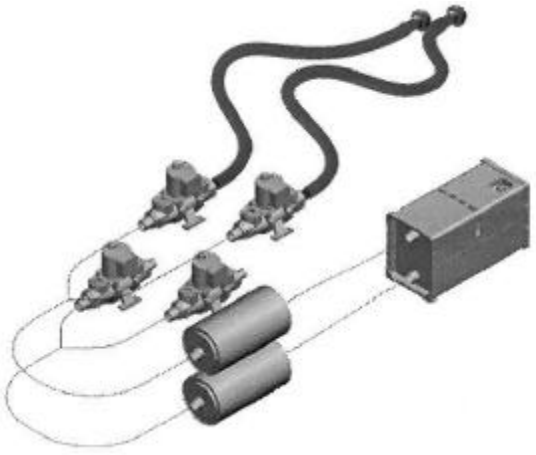
GENERIC NBC CP FILTRATION SYSTEMS

The following are modular NBC CP filtration systems which are applied to a wide variety of applications. They consist of an NBC filter, motor/blower unit, housings, and integration housings/ductwork. Some can be integrated into environmental control equipment.

M8A3 Gas Particulate Filter Unit (GPFU)

The 12 cfm system provides air to armored vehicle crewman ventilated facemasks, *i.e.*, M42A1/A2. Used in M113 Armored Personnel Carrier variants and USMC AAVP7A1 amphibious vehicle.

M13A1 GPFU



The 20 cfm system provides air to armored vehicle crewmen ventilated facemasks, *i.e.*, M42A1/A2. Used on the M1A1/A2 Abrams tanks, Bradley Fighting Vehicles, Multiple Launch Rocket System (MLRS), tank transporter, and other vehicles.

Modular Collective Protection Equipment (100, 200, 400, 600 cfm Systems)

Modular Collective Protection Equipment (MCPE) consists of a family of related end items from which modules can be chosen and combined to meet the unique demands of individual systems. These end items employ common parts and mountings and interchangeable connections and accessories to the greatest extent possible. MCPE provides collective overpressure to a wide variety of mobile shelters and vans. It uses the M48 NBC filter in the 100 cfm system and the M56 NBC filter in the others.

SECTION 2: RDTE ITEMS

INTEGRATED

Force XXI Land Warrior

Rationale:

Army (Requirement)
Navy, Air Force, Marine Corps (Interest)

Key Requirements:

- Protection from all threats for the individual, to include NBC threats
- Integrated vision, communication, and locator systems and enhanced equipment interface

Description:

The Force XXI Land Warrior (formerly, the 21st Century Land Warrior) is an integrated soldier defense system which will improve the warfighter's combat system interface and ability to detect, recognize, and destroy enemy soldiers and equipment. Monitor and protection systems are integrated into a full body ensemble along with advanced locations, communications, microcomputer, and vision systems to maximize the warfighter's battlefield awareness, survivability, and lethality.

RESPIRATORY

Joint Service General Purpose Mask (JSGPM)

Rationale:

Army, Air Force, Navy, Marine Corps (Requirement)

Key Requirements:

- 24-hour CB protection
- Lower breathing resistance
- Reduced weight and bulk

Description:

The JSGPM will be a lightweight protective mask system—consisting of mask, carrier, and accessories—incorporating state-of-the-art technology to protect U.S. forces from all future threats. The mask components will be designed to minimize it impact on the wearer's performance and to maximize its ability to interface with future Service equipment and protective clothing.

Joint Service Aviation Mask (JSAM)

Rationale:

Army, Air Force, Navy, Marine Corps (Requirement)

Key Requirements:

- Continuous CB protection
- Improved anti-G features
- Hypoxia protection up to 60,000 feet

Description:

JSAM will be a lightweight CB protective mask that can be worn as CB protection for all aircrew. With the addition of anti-G features, it can be worn as combined CB and anti-G protection for aircrews in high performance aircraft. It will be compatible with existing CB ensembles, provide flame and thermal protection, reduce heat stress imposed by current CB protective masks, and the CB portion will be capable of being donned in flight. JSAM must also be compatible with existing aircrew life support equipment.

CB Respiratory System (A/P23P-14(V)N) NDI

Rationale:

Navy, Marine Corps (Requirement)

Key Requirements:

- CB protection compatible with all aircraft system; integral respirator and protective ensemble

Description:

The A/P23P-14(V)N is a self contained protective ensemble designed for all forward deployed fixed wing (USN/USMC) and rotary wing (USN) aircrew. The design will incorporate a CB filter, dual air/oxygen supply and a cross-over manifold with ground flight selector switch to provide filtered air for hood ventilation, and filtered air for oxygen for breathing. The system will provide enhanced protection and offer anti-drown features.

BATTLEFIELD PROTECTIVE SUITS

Joint Service Lightweight Integrated Suit Technology (JSLIST)

The JSLIST program is a fully cooperative Joint Service RDTE effort chartered to develop new CB protective clothing for all Services. The program will yield a family of garments and ensembles, developed for Joint Service mission needs and tested to Joint Service standards. The JSLIST will provide enhanced CB protective ensembles with reduced physiological heat burden and will be generally lightweight and launderable. These garments will also integrate other types of protection. JSLIST is the first of a 3 phase program and supports a variety of Service suit and accessories. The following requirements are incorporated within the Joint ORD for JSLIST:

Lightweight CB Protective Garment (LCBPG) – Army
Advanced Battledress Overgarment (ABDO) – Army
Vapor Protective Undergarment (VPU) – SOF
Advanced Chemical Protective Garment (ACPG) – Navy
Multi-purpose Overboot (MULO) – Army
Improved CB Protective Gloves – Army
Multi-purpose Protective Socks (MPS) – SOF

There are five JSLIST clothing item requirements:

1) overgarment, 2) undergarment, 3) duty uniform, 4) boots and 5) gloves. Each of the Services' requirements are incorporated by these five JSLIST requirements.

In April 1997, the JSLIST program type classified the ABDO and MULO. The remaining items are being addressed in the JSLIST Pre-Planned Product Improvement (P3I) program, currently underway, with completion scheduled for late 1999. P3I is seeking new and advanced material candidates only. The garment design will be the JSLIST design with only minor design modifications allowed under a P3I.

Lightweight Chemical/Biological Protective Garment (LCBPG) P3I (FUE FY97) *(JSLIST Overgarment)*

Rationale:

Army (Requirement)
Navy, Air Force (Interest)

Key Requirements:

- Provide 6 hours protection against 10 g/m^2 liquid; 5000 CT vapor/aerosols
- Provide 7 days field wear (minimum) in all geographical areas (launderability not required)
- Weigh no more than 4 pounds (3 pounds desired)
- Have package volume for size medium no more than 500 in^3 (300 desired)
- Reduce the physiological heat burden by at least 20% (30% desired) over that experienced when wearing the BDO.

Description:

In test conditions, the LCBPG provides 6 hours of protection against all CB agents after moderate periods of non-CB wear. The requirement has a trade-off of wear-time and protection-time in order to achieve a lightweight, low-bulk garment for short-term, high-risk missions. The LCBPG will be a two-piece suit designed with an integrated hood compatible with the M40 mask with second skin. It will be worn as an overgarment for the duty uniform or as primary garment over underwear depending upon the environment or mission.

Advanced Battle Dress Overgarment (ABDO) (FUE FY97)
(JSLIST Overgarment)

Rationale:

Army (Requirement)
Navy, Marine Corps (Interest)

Key Requirements:

- Provide 24 hours protection against 10 g/m^2 liquid agent; 5000 CT vapor/aerosols
- Provide 45 days field wear (minimum) in all geographical areas
- Retain chemical protection after 4 launderings
- Weigh less than 4 lbs for a size medium-regular, packed garment
- Reduce physiological heat burden currently imposed by BDO

Description:

ABDO will provide 24 hour protection after extended wear and laundering. Liners currently are based upon activated carbon technology (carbon beads, thin carbon foam and others). ABDO will be a two-piece design with an integrated hood compatible with the M40 mask with second skin. It will be worn as an overgarment for the duty uniform or as a primary garment over underwear depending upon the environment and mission.

Advanced Battle Dress Overgarment (ABDO)
(JSLIST P3I Overgarment)

Rationale:

Army, Air Force, Navy, Marine Corps, SOF (Requirement)

Key Requirements:

- Provide 24 hours of protection against 10g/m^2 liquid agent, 5000 CT vapor/aerosols
- Provide 60 days field wear in all geographical areas
- Retain chemical protection after 8 launderings
- Weigh less than 4 lbs for a size medium-regular, packed garment
- Reduce physiological heat burden currently imposed by BDO

Description:

The ABDO will provide 24 hours protection after extended wear and laundering. Liner candidates are based upon activated carbon technology (carbon beads, thin carbon foam, and others). The ABDO will be a two-piece design with an integrated hood compatible with the M40 mask and second skin. The ABDO will be worn as an overgarment for the Battle Dress Uniform (BDU), or as a primary garment over personal underwear depending upon the environment and mission.

Advanced Chemical Protective Garment (ACPG) (FUE FY97)
(JSLIST Overgarment)

Rationale:

Navy (Requirement)

Key Requirements:

- Provide 24 hours protection against 10 g/m^2 liquid agent; 5000 CT vapor/aerosols
- Provide 30 days field wear (minimum) in all geographical areas
- Retain chemical protection after 4 launderings
- Weigh less than 4 lbs for a size medium-regular, packed garment
- Reduce physiological heat burden currently imposed by BDO

Description:

The ACPG will provide 24 hour protection after 30 days wear time and 4 launderings. Liners currently are based upon various activated carbon technologies (carbon beads, thin carbon foam and others). It will be two-piece suit with an integrated hood compatible with the MCU-2/P mask with second skin. The ACPG will be worn as an overgarment for the duty uniform or as a primary garment over underwear depending upon the environment and mission.

Vapor Protective Undergarment (VPU) (FUE FY97)
(JSLIST Undergarment)

Rationale:

SOF (Requirement)

Key Requirements: (When worn under the Nomex coveralls)

- Provide 12 hours protection (24 desired) against 10 g/m^2 liquid; 10,000 CT vapor/ aerosols
- Provide 30 days field wear (minimum) in all geographical areas
- Retain chemical protection after 4 launderings (10 desired)
- Provide flash fire protection (10 watts/cm^2 for 6 seconds)
- Weigh less than 3 pounds (without coveralls)
- Reduce the physiological heat burden imposed by the CPU worn with coveralls

Description:

The VPU will provide 12 hour protection after extended wear and laundering. It will also offer a reduction for the heat stress burden when compared to the CPU. The VPU will be a one or two-piece undergarment with an integral hood compatible with the M42 series mask.

Groundcrew Ensemble (GCE)
(JSLIST Duty Uniform)

Rationale:

Air Force (Requirement)

Key Requirements.

- Enhance existing capability with lighter, less thermal burdening ensemble

Description:

The GCE provides chemical protection, from the neck down, to personnel while in an Air Base environment. It provides protection from liquid and vapor hazards while greatly reducing the level of physiological stress encountered with the current battle dress overgarment (BDO). The material, which will be lighter and will provide a reduction in heat stress, will be capable of being laundered and decontaminated.

Joint Firefighter Integrated Response Ensemble (JFIRE)
CB Protective Firefighter Ensemble (FFENS)
Fire Fighter Suit-Combat (FIS-C)

Rationale:

Army, Air Force (Requirement)

Key Requirements:

- Provide 24 hours of CB agent protection against 10 g/m^2 liquid agent

- Provide firefighters CB protection in both structural and crash fire fighting/rescue operations
- Allow firefighters to use mission essential tools and equipment
- Provide resistance to water and all standard fire fighting chemicals (foam, CO_2, aircraft POL)
- Capable of being donned in 8 minutes unassisted

Description:

JFIRE is a joint effort between the Air Force (lead agency) and the Army. JFIRE meets all requirements for the Air Force Firefighters Ensemble (FFENS) and the Army Firefighter's Integrated Suit-Combat (FIS-C). JFIRE has integrated the JSLIST to the fire protective equipment, both structural and proximity, along with the Interspiro CB Protective Mask. The Interspiro CB Protective Mask provides switchable filtered air utilizing the C2 Canister and a positive pressure Self-Contained Breathing Apparatus (SCBA) capability. The Air Force is also investigating the applicability of a Commercial-Off-The-Shelf (COTS) glove that can be used for both fire protection and CB protection.

JFIRE

Multipurpose Overboot (MULO)
(JSLIST Boots)

Rationale:

Army, Air Force, Marine Corps (Requirement)
Navy (Interest)

Key Requirements:

- Provide 24 hours protection against 10 g/m^2 liquid agent as well as environmental protection from water, snow and mud
- Provide 60 days wear in all environments without degradation of protection
- Provide resistance to incidental slashing by POL and self-extinguishing flame resistance
- Capable of being decontaminated to an operationally safe level using standard decontaminants

Description:

The MULO is a joint service program under the auspices of the JSLIST program. It will be made of an elastomer blend and will be produced by injection molding. It will be designed for wear over the combat boot, jungle boot and intermediate cold/wet boot. The MULO will be more durable, lighter weight and will provide more protection than the GVO/BVO. The sole will be designed to provide traction on various surfaces including dirt and metal.

Multipurpose Protective Sock (MPS)
(JSLIST P3I)

Rationale:

SOF (Requirement)

Key Requirements:

- Provide 24 hours of protection against 10g/m^2 liquid agent, (5000 mg-min/m^3 vapor/aerosols if boot is made of permeable material)
- Provide 45 days field wear
- Must be comfortable, fit well and be compatible with all SOF footwear; *i.e.*, desert, jungle, assault boots, *etc.*
- Retain chemical Protection after 4 launderings

Description:

The MPS will provide 24 hours protection after extended wear and laundering when worn over the issue wool sock and under SOF footwear. The MPS must provide comfort, fit and compatibility when worn over the wool sock and under the various types of SOF footwear. The boots' composition and design will determine whether both liquid and vapor protection must be integrated into the sock material.

Improved CB Protective Glove
JSLIST Gloves (JSLIST P3I)

Rationale:

Army (Requirement)
Navy, Air Force, Marine Corps (Interest)

Key Requirements:

- Provide 24 hours protection against 10 g/m^2 liquid agent
- Provide protection against POL and standard decontaminants

- Provide self-extinguishing flame resistance
- Provide 15 days wear durability in all environments without degradation of protection
- Provide dexterity equal to or better than the standard 14 and 25 mil butyl gloves

Description:

The Improved CB Protective Glove will be a joint service program under the auspices of the JSLIST program. Candidate materials include a flame retardant (FR) butyl rubber; polyepichlorohydrin/ FR butyl rubber; and an experimental, permeable material.

SPECIALTY SUITS

Improved Toxicological Agent Protective (ITAP)

Rationale:

Program is a Joint Service Program

Key Requirements:

- Provide splash and vapor protection against a potential exposure to liquid agent when worn as a system—requirements: 10g/m^2 HD, VX, GB, L agent challenge for 2 hours.
- Provide an optional Personal Ice Cooling System (PICS).
- Be functional as a system where temperatures range from 0° to 100°F when used with a cooling system.
- The suit and overhood are capable of being decontaminated for a minimum of 5 reuses, 2 hours per use (1 hour at IDLH), after vapor and particulate contamination. After liquid contamination ITAP suit will be decontaminated and held for disposal.
- Must have a minimum shelf life of 5 years.
- It is required that the fabric be self-extinguishing meeting NFPA 1991.
- It is required that the fabric be static dissipative and not hold a charge sufficient to set off munitions and explosives in accordance with current Explosive Safety Board requirements.
- The fabric should be light in color to reduce operator solar heat load. Capable of being stored within the temperature range of 0° to 120°F.

Description:

ITAP will replace the M3 TAP ensemble. ITAP will enhance existing capabilities by providing a less thermal burdening ensemble. ITAP will provide skin and respiratory protection during peacetime and wartime for short term operations in Immediately Dangerous to Life and Health (IDLH) toxic chemical agent (up to 1 hr), emergency life saving response, EOD incident response, routine chemical facility operations and initial entry monitoring. The ensemble must be capable of rapid employment and require reduced logistical support.

COLLECTIVE PROTECTION EQUIPMENT

Advanced Integrated Collective Protection System (AICPS) for Vehicles, Vans and Shelters (VVS)

Rationale:

Army (Requirement)
Navy, Marine Corps (Interest)

Key Requirements:

- Integral NBC filtration power and environmental control for vehicles, vans and shelters
- Minimize filter changes and overall system logistics burden
- Reduced size, weight and energy requirements

Description:

The AICPS, which uses a deep-bed carbon vapor filter for extended gas filter life, is an NBC filtration system integrated with an environmental control unit and auxiliary power unit for combat systems. The combined components provide overall size, weight and energy reduction, and eliminate the need for additional electrical power from the host system.

AICPS mounted to S788 Shelter on M1097 HMMWV

Shipboard Collective Protection Equipment

Rationale:

Navy (Service-Unique Requirement)

Key Requirements:

- Provides more efficient, long life filters
- Provides plans for backfitting existing non-CPS ships

Description:

Shipboard Collective Protection Equipment (CPE) provides a contamination-free environment within specified zone boundaries such that mission essential operations and life sustaining functions can be performed during or after a CB attack. The objective of this program is to provide Pre-Planned Product Improvements (P3I) to the current Shipboard CPS to decrease logistic costs by extending filter life, reducing shipboard maintenance requirements, and providing energy-efficient fans. The program develops improvements to existing shipboard HEPA and gas adsorber filters, supports long term shipboard testing of filter improvements to develop filter life database, and provides plans for backfitting existing non-CPS ships. Shipboard CPE is being installed on selected new construction ships.

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